

Stray Notes on Erebiid Species.

By B. C. S. WARREN, F.E.S.

Erebia fletcheri, Elw., *E. dabanensis*, Ersch., and *E. kozhantschikovi*, Sheljuzhko. When looking over the Erebias in the B.M. collection last year, I came on an unmistakable ♂ of *E. fletcheri*. This is, so far as I know, the only known ♂ of this species. Strangely enough the specimen had been dissected by Elwes, who according to his habit had mounted the genitalia on a card, but he apparently never published anything about it or added anything to his first note, which was published at the same time as his figure of the ♀ (*Trans. Ent. Soc.* 1899, pl. 12, fig. 4). The genitalia were so contorted on the card that it was quite impossible to gain any real idea of their formation, but the authorities kindly gave me permission to try and remount them, which although they were a little damaged by their previous rough treatment, I was able to do in a quite successful manner. The resulting mount plainly showed that *fletcheri* was very distinct, with no real affinity to any other known species, and not the slightest similarity to *dabanensis*.

A thing which had always surprised me was why this very distinctly marked insect should have always been placed as an aberration of *dabanensis*. Eiffinger confidently asserts that he is sure that Elwes' figure can only be an aberration of *dabanensis*, and others have said the same. There is, however, no real resemblance between the two. Quite recently, two remarkable specimens have come into my possession, which at once threw some light on this point. They are aberrations of *dabanensis* and *kozantschikovi*, but both show considerable resemblance to *fletcheri*, in fact they were sent to me as the latter by Staudinger. A further point of confusion has been the failure to distinguish between *dabanensis* and *kozantschikovi*. It was only in 1925 that Sheljuzhko described the latter, and aberrations of it are even more like *fletcheri* than those of *dabanensis* owing to the very dark, almost unicolorous underside of the hindwing. It was doubtless because Elwes did not fully appreciate the difference between his Wilui specimens (*i.e.* *kozantschikovi*) and *dabanensis*, that he placed his ♀ of *fletcheri* as an aberration of the latter. I am indebted to Mr. Sheljuzhko for permission to dissect one of his co-types of *kozantschikovi*, and I have also been able to examine the genitalia of one of Elwes' specimens in the British Museum collection and a third specimen in my own collection, and structurally the three agree perfectly, though from widely separated localities, keeping constantly distinct from *dabanensis*, of which I have mounted the genitalia of some half dozen specimens.

It may be noted here that in Dr. Chapman's paper on the genus *Erebia* (*Trans. Ent. Soc. Lond.* 1898) he gave a drawing of the clasps of both *dabanensis* and *kozantschikovi*, but as he did not distinguish between the two he makes a mistake which is rather confusing. He figures the clasp of *tundra* (he had the type to examine from the Staudinger collection) on plate XV., f. 51*a and 51*b, which is typical of *dabanensis*, for *tundra* is an aberration of that species; then he gives two clasps of "*dabanensis*" figs. 51b and 51c, which are really *kozantschikovi*.

Although I do not consider that as a rule the naming of aberrations

is of any particular value, in the present case it seems useful to name these *fletcheri*-like aberrations, as it may help to keep similar specimens from being confused with *fletcheri* in the future.

E. dabauensis, ab. **confusa**, nov.

In this aberration the yellowish-brown rings which normally surround the four small black spots on the upperside of the forewing, are extended so as to form a broad, continuous, transverse band, with perfectly even inner and outer edges, on both upper and underside of the forewings. Otherwise the specimen is normally marked. In *dabanensis* this band is usually outlined on the underside of the forewings, but is always suffused to a greater or less extent by the dark ground colour. It is therefore on the upperside that this aberration is most abnormal.

Type, a ♀ in my collection from Mondy, Sajan Mountains.

E. kozhantschikovi ab. **rubescens**, nov.

In this aberration all those markings which are usually a deep ochre in the type are of a dark mahogany colour. On the upperside of the forewings only three of the usual five black spots remain, and these are reduced to the merest points. There are five mahogany-coloured spots more or less forming a band, but intersected by the nervures, with an even outer edge but shading off irregularly on the inner edge. On the hindwings, there are three very small mahogany-coloured dots without black spots. On the underside, the forewings are crossed by a very broad and continuous mahogany-coloured band (quite as broad as the normal band in *fletcheri* and at least twice as wide as that of *kozhantschikovi*) in which are four very small black points near the outer edge. The hindwings are almost unicolorous black, with just a faint indication of the usual dark grey antimarginal band. The whole ground-colour, both on the upper and underside, is much blacker than usual. The underside of this specimen is quite suggestive of *fletcheri*, but of course the markings of the upperside are much less pronounced. Type, a ♂ in my collection from the Sajan Mountains.

E. pawloskii, Men.

This species is a most variable one; a short study of it will convince most people of the fact. But in spite of this I own I felt reluctant to accept the large and very strikingly-coloured *theano* as a subspecies of it.

Still, all morphological data pointed to this being the case, and Dr. Chapman came to the same conclusion many years ago. There is, it is true, a constant difference in the genitalia, of *theano*, shown by the development of the shoulder of the clasp, and superficially *theano* is very constant too, but a long study of the Erebian genitalia has demonstrated that the particular form of variation exhibited by the clasp of *theano*, is not a reliable character, but one which can only be accepted as of specific value when accompanied by some second structural difference. It is also a fact that in numerous cases, highly specialised subspecies of *Erebia* species often develop some structural difference from the type form, which difference is most frequently connected with the dorsal ridge of the clasp. Finally, in *E. ceto*, a

species quite distinct from *theano*, a certain race which superficially differs but little from the type, produces as its normal form, a form of the termination of the clasp almost identical with that of *theano*, and differing from typical *ceto* in just the same manner as *theano* does from *pawloskii*. So altogether there seemed no real doubt about the matter, but I felt it would be by no means easy to convince the general collector of the fact. Under these circumstances I was doubly pleased to get two very remarkable specimens from Staudinger, which effectually did away with the apparent gulf between *pawloskii* and *theano*. Bang-Haas referred them to *haberhaueri*, but personally I placed them as small *theano*. On mounting the genitalia the very interesting fact was disclosed that they were true *pawloskii*. This discovery at once links up the somewhat scattered units of this species. It must be recalled that the N. American *ethela* (= *sofia*, Str.) is also a form of *pawloskii*, but the colour in the cell on the upperside of the forewing, and the yellow spot at the base of the hindwing on the underside, were features unknown in *pawloskii*, and more suggestive of relationship with *maurisius* (and *haberhaueri*), though there too the yellow basal spot of the hindwings on the underside did not agree. Elwes noted that he had never seen an Asiatic specimen with this spot. Of course it is present, very strongly, in *theano*, but Elwes regarded the latter as a distinct species quite unconnected with *ethela*. The two specimens of my newly discovered form of *pawloskii* naturally show this characteristic spot of *ethela* quite strongly, for they are small replicas of *theano*, having in fact developed the facies of the latter while retaining the size and structure of *pawloskii*. So on the one hand while they bridge the gulf between *pawloskii* and *theano*, on the other they, almost certainly, represent the form from which the slightly darker *ethela* must have sprung, though very probably at the time when they penetrated to the north of America their facies may have been even closer to *ethela* than they now are.

This extremely interesting subspecies may be described as follows :

E. pawloskii, ssp. **connexa**, nov. (= *haberhaueri*, ssp. *tunkuna*, Bang-Haas, *i.l.*)

Size as *pawloskii*. Upperside: forewings dark brown with a band of six very broad brownish-orange spots, just separated by the dark nervures. The first three spots (those next the costa) and the last (next the inner margin) project towards the base of the wing further than the other intermediate ones, just as in *theano*, while the outer edge of the band is perfectly regular. The distal half of the discoidal cell is filled with the same colour as the spots of the band, while there are traces of a further spot between the cell and the inner margin. The hindwings are dark brown with a single row of six broad spots, the same colour as those of the forewings, but they are more widely separated than the latter, by the dark ground colour running along the nervures. As in *theano*, the first three spots project nearly twice as far towards the base of the wing as the following ones; there is, however, no basal spot on the upperside. Underside; The markings are exactly the same as those of the upperside, only the basal area of the forewings is suffused with a rusty red, from the inner edge of the band to the base, and on the hindwings there is a large yellow basal spot, which corresponds to the central one of the basal row, to be seen

in *theano*. It is the same spot that is so characteristic a feature of *ethela*, but all the markings are much stronger than in that race. All the spots of the underside are a very pale yellow, much lighter than on the upperside. Type, a ♂ in my collection from Schawyr, in the eastern Tannuola Mountains.

The name employed *i.l.* by Bang-Haas was very inappropriate, the Tunkun Mountains being some two or three hundred miles north of the Tannuola Range.

Notes on the relationship between the Melitaeidi and particularly between those of the *athalia*, Rott., group.

By ROGER VERITY, M.D.

The discovery made by Suschkin (1913) and by Reverdin (1920-1927) of marked variations in the genitalia of the *Melitaea* has opened out an interesting field to investigation and to deductions. Hitherto it seemed a hopeless puzzle to explain their existence, their connections and their origins, but the knowledge we have lately acquired from other groups of Lepidoptera has shed considerable light also on this problem, which apparently fits in perfectly with the general laws we have made out. There are only a few particular points which need to be looked into more thoroughly to complete the general picture. A serious hindrance is unfortunately created by the extremely vague and fragmentary data concerning the Asiatic races of the *athalia* group and the indefinite way in which their few names have been applied.

Let us begin by a rapid general survey of the evolution of the tribe. In my paper on *didyma*, Esp., I have pointed out that the *Melitaea* have originated from the tropical *Phyciodes* as the result of adaptation to the temperate climate, which began to appear on the face of the earth in the Polar regions. Amongst the *Phyciodes* which still live at the present day in the temperate climate of North America there are species, like *ismeria*, Boisd., of Colorado, which are extremely similar in shape and pattern of both surfaces to *Melitaea harrisii*, Scudd., the American representative of *dictynna* and *protomedia*, which only differ from it by some slight specific features, and there are species like *Phyciodes barnesi*, Skinner, which very much resemble the small summer forms of the Palearctic *M. phoebe*, Schiff., with a mixture of *arduinna*, Esp. features by their shape and general appearance and by the fundamental lines of the underside pattern. This obviously shows that these two types of structure and pattern are the most primitive ones in the genus *Melitaea*, and the American species confirm it clearly by affording cases of transition and different mixtures of features, which one is accustomed in the Old World to associate with perfectly distinct groups of species. Thus *whitneyi*, Behr., on the upperside might be mistaken for a *phoebe*, whereas on the underside it is intermediate between *phoebe* and *dictynna* and it resembles the latter more than the former; that this is no case of superficial likeness, but a really intermediate species, similar to the common ancestor, from which those two groups may have sprung, possibly when still at the *Phyciodes* stage, can be considered more or less proved by the rather unexpected discovery of the last few years that the genitalia of *dictynna* resemble much more those of *minerva*,